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10 043,133	01.14.2002	Masaru Yata	36856.591	9783

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EXAMINER

SUMMONS, BARBARA

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 04 09 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/043,133

Applicant(s)

Yata et al.

Examiner

Bailana Summons

Group Art Unit

2817

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 (three) MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☐ Responsive to communication(s) filed on _____.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-16 is/are pending in the application.
- ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☒ Claim(s) 1, 2, 6, 10, 11, 15 and 16 is/are allowed.
- ☒ Claim(s) 3-5, 7-9, and 12-14 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☒ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☒ All ☐ Some* ☐ None of the:
- ☒ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____.
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 5
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

Art Unit: 2817

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On page 4, on each of lines 10 and 11, note that "parasite" should be --parasitic-- (see e.g. pg. 19, ln. 5). On page 25, on line 20, note that "filter 1114" should be --filter terminal 1114-- (see lines 2-3). Additionally, on page 25, the two sentence on lines 18-23 appear to be incorrect because the input and output impedances of the entire device are "substantially equal" (see claim 1, lns. 1-2). However, the specification at page 25, lns. 18-23, states the impedance difference is a multiple of four between terminals 1129 and 1114 (see Fig. 10) which are the input and output of the entire device and not just of the first filter 1101. Clarification and/or appropriate correction is required.

The Examiner wishes to draw Applicants' attention to Endoh et al. U.S. 6,483,402 (cited below) which provides a succinct explanation of the input/output impedances of the individual filters vs. the input/output impedances of the entire device (see e.g. col. 11, ln. 54 through col. 12, ln. 2). If Applicants were to add a similar explanation of the impedances, along with a correction of the apparently incorrect characterization of the impedances in the discussion of Fig. 10, the Examiner would not consider such an addition new matter as it would simply be a clearer explanation of the well known impedance equations of series and parallel connected circuits.

Claim Objections

2. Claim 2 is objected to because of the following informalities:

In claim 2, on line 4, note that "transducer" should be the plural --transducers--.

Appropriate correction is required.

Art Unit: 2817

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3-5, 7-9, and 12-14 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, initially, the claim recites a "filter device having substantially equal input and output impedances" (see lines 1-2) and then further recites that "one of the input and output impedances of each of the first and second filters is approximately four times the other impedance" (see lines 13-15). It is unclear how it happens that the input and output of the filter device can be "substantially equal" in light of the specification which in some places clearly indicates that the input/output of the entire filter device are different by a multiple of four. For example, on pg. 25, lns. 18-23 (see associated Fig. 10), Therefore, it is unclear where (i.e. at what terminals or nodes) the impedances are substantially equal or different by a multiple of four. Clarification is required. For purposes of any rejections that may follow, the Examiner will ignore the first limitation (i.e. "substantially equal...impedances") because it appears in the preamble. The Examiner believes that the claims may be rendered clear by changes to the specification only, but in view of the contradictory nature of the specification the claims cannot be understood "in light of the specification".

Each of claims 3, 7, and 12 recites that the first and second filters have "a structure in which a **preliminary** surface acoustic wave filter having substantially equal input impedance and

Art Unit: 2817

output impedance is arranged....at least one interdigital transducer is halved..." (emphasis added). This limitation cannot be understood because the "preliminary" filter does not appear to be a part of the final inventive structure because: (1) it appears that the specification calls the "preliminary" filter the prior art filter of Fig. 2 (see the spec. at pg. 13, lns. 7-24); and (2) if you have "halved" an interdigital transducer, then the input and output impedances will not be "substantially equal". For the purposes of any rejections that may follow, the Examiner will consider the claims to read as if all material from "in which a preliminary..." through "...output impedance is" has been deleted. The Examiner believes that each of the first and second filters has a structure wherein "at least one of the interdigital transducers is halved" is an appropriate representation of the inventive structure. If this is not a correct assumption, clarification is required. Similarly, in each of claims 4, 8 and 13, rather than "the preliminary" filter (see line 2 of each claim), the Examiner will consider --each of the first and second surface acoustic wave filters-- to be a longitudinally-coupled resonator type filter.

Appropriate correction is required.

Allowable Subject Matter

5. Claims 1, 2, 6, 10, 11, 15, and 16 are allowable over the prior art of record.
6. Claims 3-5, 7-9, and 12-14 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. § 112, second paragraph, set forth in this Office action.
7. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, including the X references cited on the International Search Report provided

Art Unit: 2817

by Applicants with their Information Disclosure Statement, fails to disclose or fairly suggest a surface acoustic wave (SAW) device "having substantially equal input and output impedances" (see claim 1, lns. 1-2), and comprising: balanced and unbalanced signal terminals; first and second SAW filters arranged as recited between the signal terminals; and the first and second filters having one of "input and output impedances...approximately four times the other impedance" (see claim 1, lns. 13-15).

The reference to Endoh et al. U.S. 6,483,402 is considered to be the closest prior art of record, but it operates in an opposite manner. That is, the individual first and second filters (see e.g. 92 and 93 in Fig. 13) have equal input and output impedances, whereas the input and outputs of the entire device have impedances that are different by a factor of four (see e.g. col. 11, ln. 54 through col. 12, ln. 2). Regarding the X references supplied with the I.D.S./International Search Report: DE 198 18 038 shows the required first and second filter arrangements between balanced and unbalanced terminals, but does not appear to discuss the relations between the input/output impedances of the first and second filters or the input/output impedances of the entire device; WO 98 57429 appears to only disclose changing the input or output impedance of a single filter by modifying the interdigital transducers thereof; and EP 1 168 611 also only appears to disclose changing the input or output impedance of a single filter by modifying the interdigital transducers thereof. Most of the other prior art on the I.D.S. disclose first and second filters connected in series rather than a first filter connected between the unbalanced terminal and the first balanced terminal and a second filter connected between the unbalanced terminal and the second balanced terminal.

Art Unit: 2817

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Endoh et al. U.S. 6,483,402, and its equivalent JP 2001-267885, included for Applicants' convenience, has been discussed in detail above.

Mita et al. JP 2001-292050 discloses series connected SAW filters (see e.g. Fig. 5), one filter 41 having different input/output impedances by dividing an IDT in an electrode crossing width direction, and device balanced/unbalanced terminals.

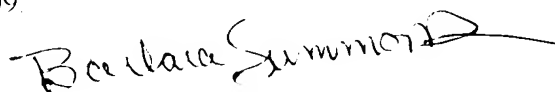
Nakazawa et al. JP 11-97966 discloses series connected SAW filters (Fig. 2) with the impedance modified by dividing an IDT in a SAW propagation direction (abstract, last 4 lines).

Baier et al. U.S. 6,353,372 is an English language equivalent of WO 98/57429.

Tada U.S. 5,994,980 (Fig. 1) discloses a balanced/unbalanced SAW device with filters connected as recited, but has only one filter 4 is 180 degrees out of phase (see col. 6, lns. 38-44), and does not have individual filters with the input/output impedances different by a factor of four.

Ehara et al. U.S. 6,424,239 discloses a balanced/unbalanced SAW device with filters connected as recited, but does not have individual filters with the input/output impedances different by a factor of four.

9. Any inquiry concerning this communication should be directed to Barbara Summons at telephone number (703) 308-4947, FAX no. (703) 308-7724, receptionist's no. (703) 308-0956, Supervisory Examiner Bob Pascal (703) 308-4909.



Barbara Summons
Primary Examiner
Art Unit 2817

bs
April 4, 2003